



# **Actions Speaker Louder Than Words**

**ReacTickles and Somantics: Learning about communication from young people with autism**

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‘Not to have confidence in one’s body is  
to lose confidence in oneself’  
*Simone de Beauvoir (1974)*

# OVERVIEW

- ✕ **Opportunities:** inspiration and ideas, rather than rationalisation
- **Making things:** how objects and prototypes create possibilities
- ▲ **Projects:** Shape, Listening Aloud, Somability

# Opportunities

- ✕ Technologies can be artworks: experiences, emotions and senses
- ▲ Physical manipulation is not essential for participation
- Interaction can be a device for co-articulation
- Understanding autism offers a myriad of possibilities for communication
- Repetition is essential for self assurance and learning

# Rhythm

- ✕ Helps manage stereotypical behaviour and emotional regulation
- ▲ Physical exercise without effort
- Empathic without theory of mind
- Expressive and creative
- ⬡ Spontaneous, no instructions needed!

# Perception

- ✕ Different in autism?
- ▲ Direct relationship between actions, effort, space, objects and intentions
- Contributes to motivation
- Conscious knowledge and perception are present when interacting
- ⬡ This is not the product of high order cognition

# The body

- ✕ The body is constantly extending it's [corporeal] self into the wider world through perception.
- If it were possible to visualise this body as a shape it would be a continuously shifting and morphing shape.
- *Body schema* is an unconscious mapping of the actuality of bodily experience in relation to the perceived possibility for experience.
- ♥ Understanding how the brain represents of the body in relation to space awareness has important implications for people suffering from disabilities and disturbances of the body schema and is thus of relevance the design of movement sensing technology.

# The body:autism



Children with autism perceive information in their environment differently from their typically developing peers.



Their atypical sensory perception can impact on how spatial-temporal information is processed.



Children may need habitual exposure to spatial-temporal change in order to reduce anxiety caused by sensory overload.



Habitual routines enable us to cope with the challenges of change through updated perceptions of possibility.



# Movement



The body expresses itself through movement and indirectly communicates with the everyday world that it inhabits.



We can discover the body's expressive potential when free from the limitations and structure of classical dance forms.



What are the natural rhythms of the person with autism, how are they expressed through movement?



Moving and singing together make collective tasks far more efficient, playing a profound role in creating and sustaining human communities.

# Gesture



Gestures are a representational and observable form of body movement



Can be be manipulative, based on physical or haptic contact



Can be communicative, as semaphoric sign or semiotic code



They are also expressive, eg, responding to rhythms and beats whereby people synchronise and move in resonance with the sounds and music.

# Mirrors



In a mirror it is possible to see our body in one position, while feeling it to be in another position - through the proprioceptive sense.



Mimetic activities are not only a source of pleasure, but can strengthen relationships, stimulate imagination and personal identity.



When we sense that our movement is in time with the movements of others, this can lead to feelings of empathy and harmony with other.

# Kinect Motion Sensor: why?



Kinect is a motion sensing camera for the XBox and Windows. Users control and interact without a controller, using gestures.



There is a direct correlation between the amount of physical effort required to perform effectively and the sense of immersion the player experiences.



Players associate meaning to their level of exertion actions. Exertion can also elicit affective expressions.

# Making Things

- ✕ Inspiration Labs/Probes: music, paper, video, animation, cameras
- ▲ Using old things in new ways: cups, scarf, exercise ball
- Experience prototypes: responsive but not refined
- Prototypes for co-articulation, interacting and storytelling
- ⬡ Using video to observe and reflect on communication

# Interactive Arts



A unique aesthetic experience that does not impose meaning through narrative or character.



Experience is informed by the synchronicity of light, colour, line, rhythm and beat.



Even without physical interaction the experience of observing creates a bodily response that is similar to that of watching a dance performance.

Messa di voce  
Divide by Zero  
Flong



**messa di voce**  
tmema • blonk • la barbara



# Animation

Oskar Fischinger, Len Lye and Norman McClaren, used animation to create the illusion of moving artworks that synchronized with rhythm and music.

- These films offered a unique aesthetic experience that did not impose meaning through narrative or character.
- Audience appreciation of the films was facilitated through their perception of the synchronicity of light, colour, line, rhythm and beat.
- These films have no tools with which to physically interact, but the experience of watching them creates a bodily response that is similar to that of watching a dance performance.

Wells, P. (2000) Understanding Animation. Routledge. New York

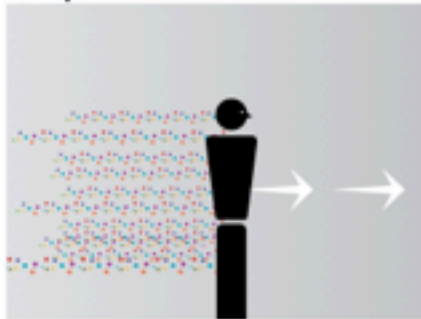
## Somantics Story Boards.

### 4: Bouncing Ball.



A ball is fired into the scene. Rebounding of the edges of the projection area. As a person enters the scene the ball rebounds off of their silhouette.

### 5: Sparkles Trail.



Sparkles are left in the wake of the body moving through the scene.

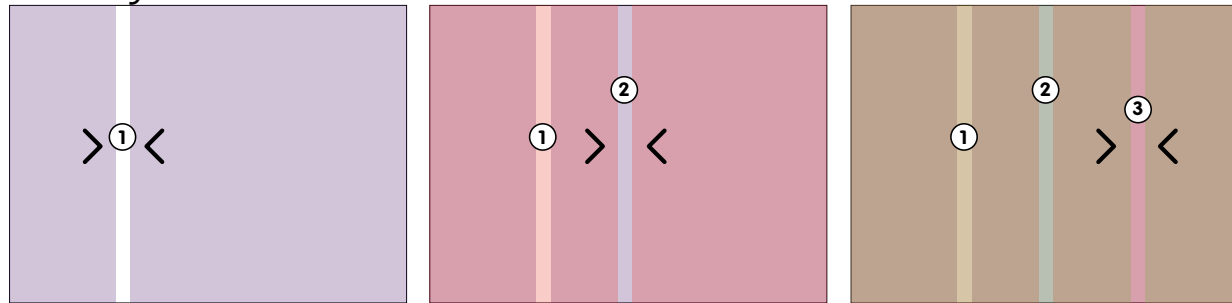
### 6: Paint Trail.



Touches act like a giant paint brush. With each touch creating a new colour to paint with.

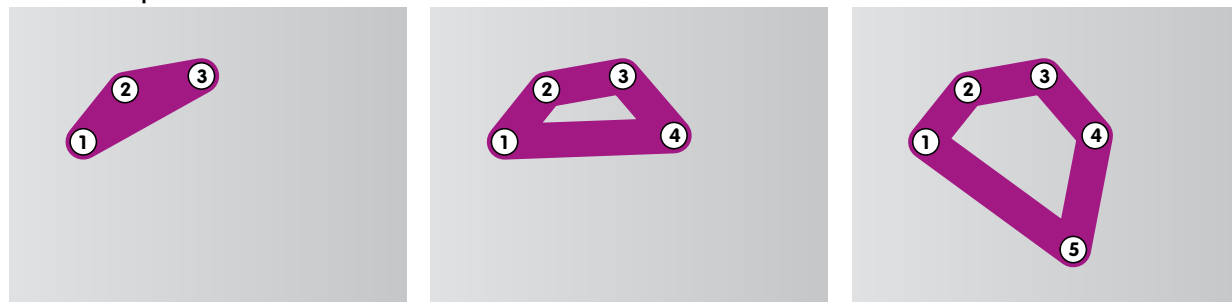
## Somantics Story Boards.

### 1: Passage.



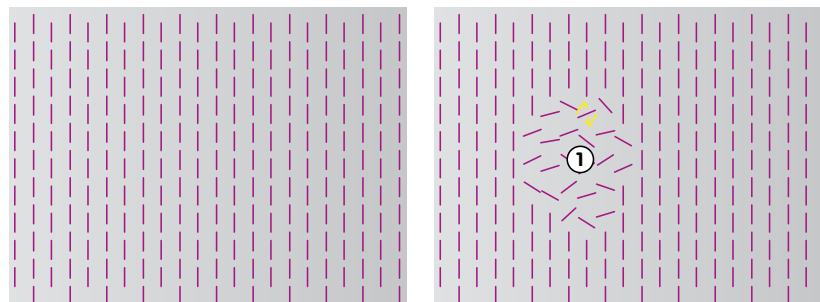
As each persons hand - body enters the scene a new passage appears. Each changing the colour of the scene.

### 2: Points (ipad)



Each two points show a line that connects them. More touches. More lines. Creating geometric shapes.

### 3: Windmills



A set of propellers sits on the screen. As a touch is passed over the scene the propellers spin and turn creating a visual turbulence.

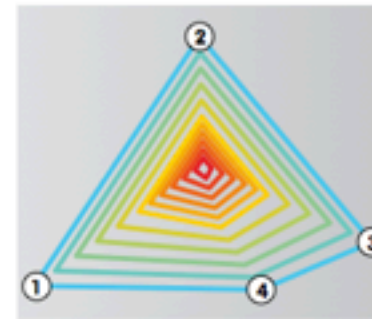
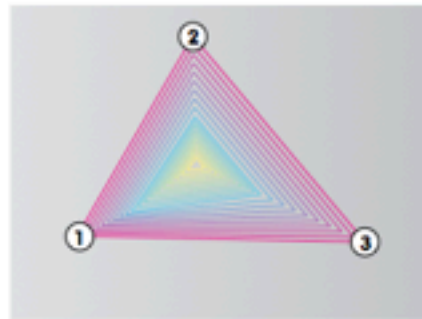
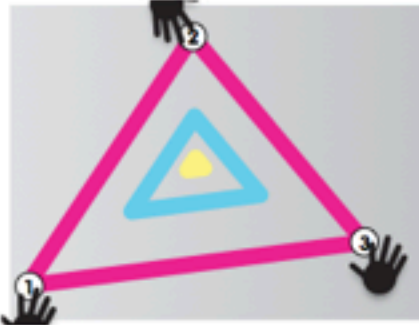
## Somantics Story Boards.

### 7: Pathway.



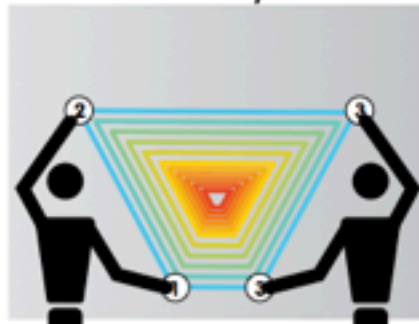
Each touch creates a traveling line that moves up to the top of the screen. Like a race track of paint. Moving hands from left to right creates wiggles. This can work for many people. Each having their own colour.

### 8: Tunnel iPad



Each point connects to the next creating a tunnel effect.

### 9: Tunnel Full Body



Each point connects to the next creating a tunnel effect.

# Models



**Do-Watch-Listen-Say**: Social Communication Intervention for Children with Autism. Quill, K.A. (2000) Baltimore: Paul H. Brookes Publishing Co



**SCERTS MODEL** Prizant, B.M., Wetherby, A.M., Rubin, E., Laurent, A.C., Rydell, P. (2006). *The SCERTS Model: A Comprehensive Educational Approach for Children with Autistic Spectrum Disorders*. Baltimore, MD: Paul H. Brookes Publishing.








**Leuven scale** used to measure Involvement and Well Being

<http://www.kindengezin.be/img/sics-ziko-manual.pdf>



**Sounds of Intent**: Mapping musical behaviour and development in children and young people with complex needs. [soundsofintent.org/](http://soundsofintent.org/)

# Findings: Kinect

-  Sense of control.
-  More controlled body movement.
-  Happiness, relaxation and increased periods of engagement.
-  Co-operation and turntaking.
-  Less *unwanted behaviours*

# New Projects

- ✕ **Somability:** making movement irresistible (communities with PMLD)
- **SHAPE:** shaping the future of education technologies today (digital stories and resources for using technology )
- **Listening Aloud:** supporting young people with special educational needs and disabilities (SEN/D) to make music using software and technology they helped design.



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**[www.cariadinteractive.com](http://www.cariadinteractive.com)**

 **ReacTickles & ReacTickles Magic:** cause and effect

[www.reactickles.org](http://www.reactickles.org)

 **Somantics:** physical interaction and flow

[www.somantics.org](http://www.somantics.org)

 **SHAPE:** video stories of technologies in the classroom

<http://www.birmingham.ac.uk/research/activity/education/shape/index.aspx>

 **LISTENING ALOUD:** making time for music

<http://museic.org/?cat=60>



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# THANK YOU

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**Economic & Social Research Council**

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